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IN THE SPECIFICATION

Page 25, please replace the paragraph at lines 13-21 as follows:

In a semiconductor device 104 shown in Fig. 7, an insulation film 30 is formed [1] in place of the n-type semiconductor layers 3, 13 in the substrate 1. The insulation film 30 is selectively formed in the positions directly under the contact holes into which the plugs 9, 19 are filled on the principal plane of the substrate 1. Therefore, the insulation film 30 is interposed between the plugs 9, 19 and the semiconductor layer 2. The insulation film 30 can be readily formed as an oxide film by selectively oxidizing the principal plane of the substrate 1 via contact holes after the contact holes into which the plugs 9, 19 are to be filled have been formed in the insulation layer 4,6.

IN THE CLAIMS

1. (Amended) A semiconductor device comprising:
  - a substrate having a principal plane;
  - an insulation layer formed on said principal plane;
  - a heat generating layer embedded in said insulation layer and opposing to said principal plane with a part of said insulation layer interposed between the heat generating layer and the substrate [therebetween];

a first wiring layer disposed on said insulation layer;

a second wiring layer disposed on said insulation layer;

a first plug embedded in said insulation layer, [of which] a lower end [is] of the first plug being connected to one end of said heat generating layer and an upper end [is] of the first plug being connected to said first wiring layer, said first plug having a rectangular cross sectional shape along said principal plane [of a rectangle] of which short sides are parallel to a main direction connecting said one end and the other end of said heat generating layer and long sides are parallel to a direction perpendicular to said main direction;

a second plug embedded in said insulation layer, [of which] a lower end [is] of the second plug being connected to said other end of said heat generating layer and an upper end [is] of the second plug connected to said second wiring layer; and

a third plug embedded in said insulation layer, [of which] an upper end [is] of the third plug being connected to said first wiring layer or said first plug and a lower end of the third plug reaching [reaches] said principal plane, wherein each of the first, second and third plugs is conductive.

10. (Amended) The semiconductor device according to claim 1, further comprising a fourth plug embedded in said insulation layer, of which upper end is connected to said second wiring layer or said second plug and lower end reaches said principal plane, wherein the fourth plug is conductive.

11. (Amended) A semiconductor device comprising:

a substrate having a principal plane;

an insulation layer formed on said principal plane and made of a low dielectric constant insulator;

a heat generating layer embedded in said insulation layer and opposing to said principal plane with a part of said insulation layer interposed between the heat generating layer and the substrate [therebetween];

a first wiring layer disposed on said insulation layer;

a second wiring layer disposed on said insulation layer;

a first plug embedded in said insulation layer, [of which] a lower end [is] of the first plug being connected to one end of said heat generating layer and an upper end [is] of the first plug being connected to said first wiring layer;

a second plug embedded in said insulation layer, [of which] a lower end [is] of the second plug being connected to an other end of said heat generating layer and an upper end [is] of the second plug being connected to said second wiring layer; and

a third plug embedded in said insulation layer, [of which] an upper end [is] of the third plug being connected to said first wiring layer or said first plug and a lower end of the third plug reaching [reaches] said principal plane, wherein each of the first, second and third plugs is conductive.

15. (Amended) The semiconductor device according to claim 11, wherein said first wiring layer is a wiring layer for transmitting stable potential, [of which] a width [is] of the first wiring layer being elongated so as to be larger than or equal to a width based on a design rule in a region including a connection portion between said first wiring layer and said first plug.

17. (Amended) The semiconductor device according to claim 11, further comprising a fourth plug embedded in said insulation layer, [of which] an upper end [is] of the fourth plug being connected to said second wiring layer or said second plug and a lower end of the fourth plug reaching [reaches] said principal plane, wherein the fourth plug is conductive.

18. (Amended) A semiconductor device comprising:

- a semiconductor substrate having a principal plane;
- an insulation layer formed on said principal plane;
- a heat generating layer embedded in said insulation layer and opposing to said principal plane with a part of said insulation layer interposed between the heat generating layer and the semiconductor substrate [therebetween];
- a first wiring layer disposed on said insulation layer;
- a second wiring layer disposed on said insulation layer;
- a first plug embedded in said insulation layer, [of which] a lower end [is] of the first plug being connected to one end of said heat generating layer and an upper end [is] of the first plug being connected to said first wiring layer;
- a second plug embedded in said insulation layer, [of which] a lower end [is] of the second plug being connected to an other end of said heat generating layer and an upper end [is] of the second plug being connected to said second wiring layer; and
- a third plug embedded in said insulation layer, [of which] an upper end [is] of the third plug being connected to said first wiring layer or said first plug and a lower end of the third plug reaching [reaches] said principal plane, the third plug forming a Schottky barrier between the third plug and said semiconductor substrate, wherein each of the first, second and third plugs is conductive.